UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,041	11/30/2001	Nainesh Rathod	11476-0011	4754

7590 02/03/2005

Intellectual Property Group
Bose McKinney & Evans LLP
2700 First Indiana Plaza
135 North Pennsylvania Street
Indianapolis, IN 46204

EXAMINER	
MARIAM, DANIEL G	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/023,041	RATHOD ET AL.	
	Examiner	Art Unit	
	DANIEL G MARIAM	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-66 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-66 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 03122002.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 65 (i.e., last claim) has been renumbered as claim 66.

Claim Rejections - 35 USC § 112

2. Claims 1 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1 and 29 recite the limitation "including information, and extraneous/other information". It is unclear whether "including information" and "extraneous or other information" provide identical or different information. Please clarify.

Since claims 2-28 and 30-54 directly or indirectly depend on claims 1 and 29 respectively, they are also rejected under 35 U.S.C. 112, second paragraph, for the same reason set forth above for claims 1 and 29.

3. Claims 26, 52, and 63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "rotating the shape by an angle that is equal to the common angle," recited in claims 26 and 52 is unclear as to what angle does the common angle refers to. Likewise, in claim 63, the limitation "rotating the indexed shape by an amount

corresponding to a most common angle of the indexed shape" is unclear what is meant by a most common angle. Please clarify.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 55-65 are rejected under 35 U.S.C. 101 because the claimed invention (independent claim 55) is directed to non-statutory subject matter. The limitation "A shape retrieval program... " recited in claim 55 is non-statutory. A program is functional descriptive material, and is only statutory when embodied in a computer readable medium. Applicants may overcome this rejection by rewriting the claim as "A shape retrieval program stored on a computer-readable medium including ..." (See MPEP 2106).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5, 10-18, 25, 29-30, 33, 39-44, 55, 61-62, 64 and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over Michael (6,735,343) in view of Rauber, et al. (Archival and retrieval for Large Image Databases: Application to an Historical Watermarks Archive).

With regard to claim 1, Michael discloses inputting a digital page, i.e., input image "10", into a computer system, the digital page including information, i.e., corners, pixels, edges, etc, including a shape, i.e., polygon, for example, and extraneous information, i.e., extraneous and/or branches (See for example, col. 5, lines 60-61); removing, i.e., cutting/eliminating the branches short to speed up the process, the extraneous information (See for example, col. 10, lines 37-52; and col. 11, lines 4-5); and orienting the shape in a predetermined orientation, i.e., predefined angle, direction, pose or polygon (See for example, col. 6, lines 4-14, col. 8, lines 42-60,; and col. 9, lines 55-61). While Michael generally uses a tree structure to represent the polygon shapes (Fig. 7), Michael does not expressly call for indexing the shapes. However, Rauber, et al. (See for example, page 20, 4th paragraph; and section 5, page 23) teaches this feature. Please note, the watermark shape taught in Rauber also contains extraneous information, such as noise, and does in fact eliminate the noise information (See for example, section 3, page 21). Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Rauber, et al. if for no other reason than to index the shapes, and to do so would at least speed up the searching and retrieving process of the shapes.

With regard to claim 5, the method of claim 1 wherein the step of removing the extraneous information includes the step of reducing the shape for faster processing (See for example, sections 4 and 5 of Rauber, et al).

With regard to claim 10, the method of claim 1 wherein the step of removing the extraneous information includes the step of removing information having a width of a single pixel (See section 3, page 21 of Rauber, et al).

With regard to claim 11, the method of claim 1 wherein the step of orienting the shape includes the step of identifying the center of mass of the shape (See for example, col. 6, lines 10-14 of Michael).

With regard to claim 12, the method of claim 1 wherein the step of orienting the shape includes the step of rotating the shape (See for example, col. 5, lines 50-58 of Michael).

With regard to claim 13, the method of claim 11 further including the step of rotating the shape so that the center of mass is in a predetermined location relative to a pair of axes (See col. 6, lines 10-14 of Michael).

With regard to claim 14, the method of claim 1 wherein the information includes layers of information (See Fig. 7 of Michael).

With regard to claim 15, the method of claim 14 wherein the step of removing the extraneous information includes the step of asking a user to identify a layer that likely contains the shape and a layer that does not likely contain the shape (which reads on col. 6, lines 57-59, where Michael states: "the user preferably sets a search window at 50. Search window 50 typically represents an area in which a user expects the polygon to be found" What this means is that, by setting a search window, the system of Michael does separate the areas that contain polygons from the areas the don not contain polygons.

With regard to claim 16, the method of claim 15 wherein the step of removing the extraneous information includes the step of determining whether the layer identified as likely containing the shape includes an arc (See for example, Fig. 11 of Michael).

With regard to claim 17, the method of claim 14 wherein the step of removing the extraneous information includes the step of ignoring layers of information that do not include an arc (Which reads on Fig. 11; and col. 6, lines 57-59 of Michael).

With regard to claim 18, the method of claim 14 wherein the step of removing the extraneous information includes the step of defining a sub-layer of information as including information from a layer having a common characteristic, i.e., branches (See col. 10, lines 51-52).

With regard to claim 25, the method of claim 1 wherein the step of orienting the shape in a predetermined orientation includes the step of determining an angle relative to an x axis that is common to a largest number of lines included in the shape (See for example, Figs. 2 & 5).

With regard to claim 29, a method of identifying shapes stored in a database, i.e., stored polygon models, that are identical or similar, i.e., match, to a search shape, i.e., extracted features of the inputted image (See for example, Fig. 6), including the steps of: inputting a drawing including information including the search shape and other information (See for example, col. 5, lines 60-61); eliminating the other information (See for example, col. 10, lines 37-52; and col. 11, lines 4-5); calculating the center of mass of the search shape, positioning the search shape so that the center of mass is in a predetermined orientation (col. 6, lines 10-46); and comparing the search shape to the shapes stored in the database, i.e., polygon models (See Figs. 6 & 9).

With regard to claim 30, the method of claim 29 further including the step of outputting the stored shapes that are identical or similar to the search shape (See for example, item 76, in Fig. 6).

With regard to claim 33, the method of claim 29 wherein the step of eliminating the other information includes the step of reducing the search shape for faster processing (This feature reads on the searching of components, i.e., corners, of the polygon which are smaller than the actual polygon shape, and thereby minimizes the processing/searching time of finding a polygon, See Fig. 6).

Claims 39, 40, 41, 42, 43 and 44 are rejected the same as claims 13, 14, 15, 16, 17 and 18 respectively. Thus, arguments analogous to that presented above for claims 13, 14, 15, 16, 17 and 18 are equally applicable to claims 39, 40, 41, 42, 43 and 44.

With regard to claim 55, claims 1 and 29 substantially encompass the limitation of this claim. Thus, argument analogous to that presented above for claims 1 and 29 are equally applicable to this claim. Claim 55 distinguishes from claims 1 and 29 only in that it recites the limitation a shape retrieval program including: storing the indexed shape in the database; and a querying routine for identifying any indexed shapes that are similar or identical to a search shape included on an inputted search drawing also having extraneous information, the querying routine applying the removing procedure to the search drawing and the orienting procedure to the search shape, and including a procedure for comparing the search shape to the indexed shapes. Michael further teaches a shape retrieval program, i.e., polygon finder program (See for example, col. 15, lines 13-21) including all of the above-identified limitations (See for example, Fig. 6; col. 6, lines 57-61; and col. 11, lines 41-67 of Michael; and section 5, page 23 of Rauber, et al).

With regard to claim 61, the program of claim 55 wherein the procedure for removing the

extraneous information includes removing pixels of information about a perimeter of the indexed shape (See section 3 of Rauber, et al).

With regard to claim 62. The program of claim 55 wherein the orienting procedure calculates the center of mass of the indexed shape (See for example, col. 6, lines 10-14 of Michael).

With regard to claim 64, the program of claim 62 wherein the orienting procedure rotates the indexed shape so that the center of mass is in a predetermined location relative to a pair of axes (See col. 6, lines 10-14 of Michael).

Claim 66 is rejected the same as claim 55 except claim 66 is an apparatus claim. Thus, argument analogous to that presented above for claim 55 is equally applicable to claim 66.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent Numbers: 5832115, 6714679, and 6834288; Publications to: Korn, et al " Fast and effective retrieval of medical tumor shapes"; Berretti, et al. "Indexed retrieval by shape appearance"; Gong, et al. "An image database system with content capturing and fast image indexing abilities"; Mori, et al "A partial shape matching using wedge wave feature extraction"; Adoram, et al. "IRUS: Image retrieval using shape"; Mokhtarian, et al. "Indexing an image database by shape content using curvature scale space"; and Zhu, et al "Image organization and retrieval using a flexible shape model".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G MARIAM whose telephone number is 703-305-4010. The examiner can normally be reached on M-F (7:00-4:30) FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LEO BOUDREAU can be reached on 703-305-4607. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL MIRIAM
PRIMARY EXAMINER
January 28, 2005